

WHAT IS CLAIMED IS:

1. A data transmitting apparatus for a digital mobile station, said apparatus comprising:

5 a data storage section for storing data to be transmitted;

an encoding section for reading and encoding the stored data in a predetermined form;

a data transmission header generating section for generating inherent distinction data transmission headers corresponding to the data encoded by the encoding section;

10 a control section for forming the encoded data and the generated data transmission headers into user data of a short message service; and,

a short message transmitting section for transmitting short message service blocks which include the user data of the short message service.

15 2. The data transmitting apparatus as claimed in Claim 1, wherein the encoding section includes means for encoding the readout data by a run length coding.

3. The data transmitting apparatus as claimed in Claim 1, wherein the data transmission header generating section comprises:

20 a data header field for distinctively identifying the transmitted data; and,

a transmitted data field allocated with the encoded transmitted data.

4. The data transmitting apparatus as claimed in Claim 3, wherein the data header field includes a transmitted data distinction field, a transmitting part distinction field, and a field for distinction of a kind of the transmitted data.

5. The data transmitting apparatus as claimed in Claim 3, wherein the transmitted data field further comprises a field which has a field length predetermined by a system, which is properly allocated with the encoded data corresponding to the field length, and which is allocated with a block termination code for indicating the termination of the allocated encoded data.

6. The data transmitting apparatus as claimed in Claim 1, wherein the control section includes a means for dividing the encoded data into blocks having a proper amount of data, adding the data transmission headers having different transmission orders to the respective divided blocks, and forming the respective blocks added with the data transmission headers into the user data of the short message service.

7. The data transmitting apparatus as claimed in Claim 6, wherein the control section forms the short message blocks by adding the short message service headers to the user data of the short message service.

8. The data transmitting apparatus as claimed in Claim 7, wherein the short message service transmitting section sequentially transmits the short message service

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 blocks with reference to transmission orders added to the data transmission headers.

9. A data receiving apparatus for a digital mobile terminal, said apparatus comprising:

5 a data transmission header detecting and analyzing section for detecting predetermined inherent data transmission headers from received short message service blocks, and analyzing the detected data transmission headers;

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 a decoding section for decoding the received short message service blocks in a predetermined form according to the data transmission headers detected by the data
 10 transmission header detecting and analyzing section;

a control section for distinctively determining storage regions of the decoded short message service blocks according to a result of analyzing the data transmission headers; and,

a data storage section for storing the decoded short message service blocks
 15 according to the determined storage regions.

10. The data receiving apparatus as claimed in Claim 9, wherein the decoding section includes a means for decoding the received short message service blocks by a run length decoding.

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 11. The data receiving apparatus as claimed in Claim 9, wherein the data transmission header detecting section includes a means for detecting from the received

short message service blocks code data included in a data header field for the distinction of transmitted data and a transmitted data field allocated with encoded transmitted data, and for analyzing the detected code data.

5 12. The data receiving apparatus as claimed in Claim 11, wherein the data transmission header detecting and analyzing section detects and analyzes code data from the data header field including a transmitted data distinction field, a transmitting part distinction field, a transmitted data kind distinction field, and a transmitted block order field.

10 13. The data receiving apparatus as claimed in Claim 11, wherein the data transmission header detecting and analyzing section detects and analyzes a block termination code which is included in the transmitted data field and which indicates a final data of the received short message service block.

15 14. The data receiving apparatus as claimed in Claim 9, wherein the control section includes a means for designating storage orders of the decoded short message service blocks according to an analysis result of the respective data transmission headers included in the respective received short message service blocks, and for then determining
20 storage positions of the short message service blocks.

15. A data transmitting method for a digital mobile station using a short message service, said method comprises the steps of:

- (1) reading and encoding stored data in a data transmission mode;
- (2) generating inherent distinction data transmission headers according to completion of data encoding;
- (3) forming the encoded data and the generated data transmission headers into user data of a short message service; and,
- (4) transmitting short message service blocks including the user data of the short message service.

16. The data transmitting method as claimed in Claim 15, further comprising the steps of:

- (5) comparing an amount of the encoded data with that of the readout data; and,
- (6) selecting the data having a lesser amount of data as the result of comparison, and forming the selected data and the generated data transmission header into the user data of the short message service.

17. The data transmitting method as claimed in Claim 15, wherein step (1) includes encoding the readout data by a run length coding.

18. The data transmitting method as claimed in Claim 15, wherein step (2) includes generating the data transmission header, which includes a transmitted data

distinction field for distinction of the transmitted data, a field for a whole number of blocks of the encoded data, a field for a transmission order of the encoded data, a transmitting part distinction field, and a field for the distinction of a kind of the transmitted data.

5 19. The data transmitting method as claimed in Claim 15, further comprising the steps of:

(5) making the encoded data into blocks having a predetermined amount of data if the amount of the encoded data is larger than a predetermined amount of data;

10 (6) adding inherent data transmission headers and short message service headers to the respective data blocks; and,

(7) sequentially transmitting the data blocks in a predetermined order.

20. The data transmitting method as claimed in Claim 19, further comprising the step of:

15 (8) adding a block termination code which indicates a final data of the block to the respective data block.

21. A data receiving method for a digital mobile station using a short message service, comprising the steps of:

(1) detecting whether short message service blocks are received in a standby state;

(2) detecting whether the detected short message service blocks detected in step

(1) include predetermined inherent distinction data transmission headers;

(3) analysing the data transmission headers and then decoding the received short message service blocks according to a result of analysis if the data transmission headers detected in step (2) include predetermined inherent distinction data transmission header; and,

5 (4) storing the decoded short message service blocks in succession to previously processed short message service blocks.

22. The data receiving method as claimed in Claim 21, wherein the step (2) includes detecting whether a transmitted data distinction code for distinction of the
10 transmitted data is included in the distinction data transmission header.

23. The data receiving method as claimed in Claim 21, wherein the step (3) includes detecting and analyzing a transmitted data distinction code for distinction of the transmitted data, a code for a whole number of blocks of the encoded data, a code for a
15 transmission order of the encoded data, a transmitting part distinction field, and a field for distinction of a kind of the transmitted data.

24. The data receiving method as claimed in Claim 21, wherein the step (3) includes decoding the received short message service blocks by a run length decoding.

20 25. The data receiving method as claimed in Claim 21, further comprising the step of:

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 (5) storing the decoded short message service block in a different storage region from that of the previously processed and stored short message service block.

26. A short message service data transmitting method for a digital mobile station comprising the steps of:

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 (1) reading and encoding stored data and making the encoded data into blocks of a predetermined unit in a short message service data transmission mode;

(2) generating inherent transmission headers corresponding to the respective data blocks and adding the transmission headers to the data blocks encoded in step (1),
 10 respectively;

(3) adding short message headers to the data blocks to which the transmission headers generated in step (2) are added, respectively; and,

(4) sequentially transmitting the data blocks.

27. The short message service data transmitting method as claimed in Claim 26, wherein the inherent transmission headers generated in step (2) includes a transmitted data distinction field, a field for a whole number of blocks of the encoded data, a field for a transmission order of the encoded data, a transmitting part distinction field, and a field for distinction of a kind of the transmitted data.

28. The short message service data transmitting method as claimed in Claim 27, further comprising the step of sequentially transmitting the blocks in step (4) with

reference to the field for the transmission order of the encoded data.

29. The short message service data transmitting method as claimed in Claim 26, further comprising the step of displaying a state of the blocks sequentially transmitted in step (4) with reference to the generated inherent transmission headers.

30. A method of constructing short message service blocks for a digital mobile station, comprising the steps of:

- (1) dividing encoded data into blocks of a predetermined unit;
- (2) generating inherent data transmission headers corresponding to the respective divided blocks and adding the generated data transmission headers to the divided blocks, respectively; and,
- (3) adding short message service headers to the divided blocks to which the data transmission headers are added, respectively.

31. The method as claimed in Claim 30, further comprising the step of:

- (4) generating and adding to the respective divided blocks a block termination code for indicating a final data of the respective block.

32. The method as claimed in Claim 30, wherein the generated inherent data transmission header comprises a transmitted data distinction field including a transmitted data distinction code, a field for a whole number of blocks, a transmission order field, a

transmitting part distinction field, and a field for distinction of a kind of the transmitted data.

33. The method as claimed in Claim 32, wherein the generated inherent data transmission header further comprises a coding type distinction field for indicating an encoding type.

34. The method as claimed in Claim 30, wherein the generated inherent data transmission header further comprises an extension field applied and used according to an intent of a service provider.

35. A short message service data block structure, comprising a user data field region which includes a short message service header field including a short message service header, a data header field for distinction of transmitted data, and a transmitted data field including encoded transmitted data.

36. The short message service data block structure as claimed in Claim 35, wherein the data header field comprises a transmitted data distinction field, a field for a whole number of blocks of the encoded data, a field for a transmission order of the encoded data, a transmitting part distinction field, a distinction field of a kind of the transmitted data, and a transmitted data field.

37. The short message service data block structure as claimed in Claim 36 wherein the transmitted data distinction field is composed of 2 bytes, the field for the whole number of blocks of the encoded data is composed of 4 bits, the field for the transmission order of the encoded data is composed of 4 bits, the transmitting part distinction field is composed of 4 bytes, the distinction field of the kind of the transmitted data is composed of 2 bytes, the transmitted data field is composed of predetermined bytes set by a system, the encoding type distinction field is composed of 6 bits, and the block termination distinction field is composed of 6 bits.

38. The short message service data block structure as claimed in Claim 36, wherein the data header field further comprises an encoding type distinction field.

39. The short message service data block structure as claimed in Claim 38, wherein the transmitted data distinction field is composed of 2 bytes, the field for the whole number of blocks of the encoded data is composed of 4 bits, the field for the transmission order of the encoded data is composed of 4 bits, the transmitting part distinction field is composed of 4 bytes, the distinction field of the kind of the transmitted data is composed of 2 bytes, the transmitted data field is composed of predetermined bytes set by a system, the encoding type distinction field is composed of 6 bits, and the block termination distinction field is composed of 6 bits.

40. The short message service data block structure as claimed in Claim 35,

further comprising a block termination distinction field for distinction of a termination of the block.

41. The short message service data block structure as claimed in Claim 40 wherein the transmitted data distinction field is composed of 2 bytes, the field for the whole number of blocks of the encoded data is composed of 4 bits, the field for the transmission order of the encoded data is composed of 4 bits, the transmitting part distinction field is composed of 4 bytes, the distinction field of the kind of the transmitted data is composed of 2 bytes, the transmitted data field is composed of predetermined bytes set by a system, the encoding type distinction field is composed of 6 bits, and the block termination distinction field is composed of 6 bits.

42. A short message service block transmitting and receiving apparatus for a digital mobile station, comprising:

a short message service block transmitting and receiving section for transmitting and receiving short message service blocks;

a transmitted data storage section for storing the transmitted and received short message service blocks;

a data coding section for encoding the transmitted data and dividing the encoded data into blocks of a predetermined unit, the data coding section sequentially decoding the blocks sequentially received in a predetermined order;

a header generating section for generating inherent transmission headers to be

added to the respective blocks;

a transmission header detecting and analyzing section for detecting and analyzing the inherent transmission headers included in the received short message service blocks; and,

5 a control section for designating a storage order of the decoded blocks according to a result of analyzing the detected transmission headers, adding short message service headers to the respective blocks to which the transmission headers are added, and transmitting the blocks including the transmission headers and the short message service headers added thereto.

10 43. The short message service block transmitting and receiving apparatus as claimed in Claim 42, further comprising a display section for displaying a state of the short message service transmitted and received according to the result of analyzing the detected transmission headers.

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